

**Oral History Interview with**

**F. Paul Keen**

**Interviewer: Elwood R. Maunder\* Lafayette, California**

**November 15, 16, 1974 and March 11, 1975**

**Sponsored by the Forest History Society and the USDA Forest Service**

**\*Ralph C. Hall also participated in this interview**

**Edited by Malcolm M. Furniss  
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**Editor's Note:** I edited this transcript of the 1974 interview based on my association with Keen, who hired me in 1950, and my familiarity with western forest entomology since then, including many of the individuals mentioned. I have referenced several publications to the text and added photos available to me as co-chairman of the history committee of the Western Forest Insect Work Conference, an organization of which he was a founder. Paul died at Lafayette, CA, February 20, 1980 at age 89. The original transcription is on file with the Forest History Society. (Malcolm M. Furniss, Moscow, ID, 2011).

## Session I, November 15, 1974

Elwood R. Maunder: Paul, where did your family originate?

Frederick Paul Keen: My family were early California people, who settled in back of San Diego in what was afterward called Keen Valley. They owned a citrus ranch. That was where I was born on November 20, 1890. In a few more days, I'll be eighty-four.

ERM: What attracted you toward a career in forest entomology?

FPK: My mother took us on camping trips. We went up into the mountains a number of times. I liked the mountains. I found them a very interesting experience. At first I wanted to be an architect when I went to college. Even when I graduated from high school, I thought I was going to be an architect. Then I decided being an architect involved too much indoor work. You had to be constantly looking at papers and drawings, and all the work was indoors. Then I remembered my early camping trips. Forestry was a new thing in those days. The forests interested me, so I thought I'd switch to forestry. When I came to the University of California at Berkeley, they didn't have a forestry department. They only had a pre-forestry curriculum which consisted of some courses they had gathered together that they thought would help a man with forestry. That was the thing I took, a pre-forestry course. Our class worked hard on the regents to get support from outside sources to form a forestry department. This is all told in considerable detail in a book entitled *Forestry Education at the University of California: The First Fifty Years*, edited by Paul Casamajor.

ERM: It was due to the fact that you young undergraduates at the University of California brought pressure on the board of regents that a school of forestry was created?

FPK: Yes.

ERM: When did you go to the university?

FPK: In 1910 when I was twenty years old.

ERM: Had you been to any college before then?

FPK: No. I was graduated from high school at San Diego.

ERM: When did the forestry school actually get underway?

FPK: They started in my last year, 1914. I had the chance to take two courses that were related. Of course, entomology was not a part of the pre-forestry curriculum. Forest entomology was given by E. C. Van Dyke. As a consequence, I got very interested in the subject. The forestry school started with two men: Merritt B. Pratt, who later became the California state forester, and Walter Mulford.

ERM: Of all the people whose courses you took at Cal, who do you think of as your mentor?

FPK: That was Dr. Edwin C. Van Dyke.

ERM: What work had Van Dyke done in the field of entomology prior to coming to the university?

FPK: He didn't know anything about forest entomology as we know it today. He was interested, however, in insects. He had been a doctor of medicine. He had collected insects as a main hobby. His forest entomology course consisted of describing insects found in the forest. That was about all that the course consisted of.

ERM: In other words, his knowledge of the subject was very elementary, but his enthusiasm was such as to arouse your strong interest.

FPK: Yes, that's right.

ERM: When you finished at Cal, where did you go to work?

FPK: In our senior year another fellow and I saw a Civil Service announcement of an entomological ranger examination. We thought that sounded interesting, so we both took it. "Entomological Ranger" was a Civil Service designation for a position that previously had been held by nonprofessionals. At one time the Bureau of Entomology had hired a lot of old fellows to work on a project here in the West and called them "agents." Then the Civil Service decided that they couldn't do that; that such personnel must have a Civil Service status. In order to keep their old agents, the Bureau was required to get these old hands to pass the Civil Service tests. The examination that they gave was intended to flunk out the old, incompetent fellows. In competition with these veterans we two college boys got first and second place in the final scores. I took the top grade and my friend, Frank H. Herbert, took second.

ERM: In 1914 when you got out of school, research in forest entomology was only beginning out here in the West. You must have known all of the early entomologists who worked in this area. For example, did you know Andrew D. Hopkins?

FPK: Yes.

ERM: He didn't spend much time out here but he was the real father, in a sense, of forest entomology in this country (Furniss 2010).

FPK: He was in charge of the forest entomology office at that time. He came out on a trip to Ashland, Oregon in 1915 and I met him there. We went on a field trip that day when we came to an infested log, he said, "Now you watch that." Then he would spot another one, and say, "Now you watch that." By the time the day was over, he had pointed out so many signs of bug trouble that I was having a hard time keeping the whole catalog in mind.

ERM: What was he asking you to look for?

FPK: Various evidences of bug infestation such as a weevil, *Pissodes*.

ERM: Can you describe the character and personality of Hopkins?

FPK: Over the years, I came into contact with Hopkins a number of times. You had to recognize the character of the man. He was very much opposed to the Forest Service. He was a man without a college education; he was very much opposed to college boys. He preferred to employ people with just a high school education. He contended that he could teach them what he wanted them to know. In other words, he would mold them in his image. That was his character. He smoked a pipe using a very different grade of tobacco. It was a mixture of some exotic perfume and exuded a very characteristic odor. At the Cosmos Club, in Washington, D.C., when the telephone rang for him, the bellboys would go around sniffing the air. Then they'd say that he wasn't there or he was there, depending on detecting the odor.

ERM: Do you mean to say that Hopkins was not academically oriented?

FPK: That's right.

Ralph C. Hall: Didn't he work originally as a state entomologist in Virginia?

ERM: West Virginia. He had been a farmer from 1877 to 1890. Then he was entomologist at West Virginia Experiment Station from 1890 to 1902 and vice director from 1897 to 1902. He was a professor of economic entomology at the University of West Virginia during part of that time, 1896 to 1902, and had authored a number of bulletins on insects. He was the holder of many scientific honors. He has often been called the father of forest entomology in the United States. My records do not indicate where he got his academic credentials. I am under the impression that his doctorate may have been an honorary one.

FPK: I think so too; I really don't know.

ERM: Was he a bit of an eccentric?

FPK: He was a crotchety old man. He was easily offended and would put you on the spot in no uncertain terms. He seemed to be just a one-man show. He wanted his agents to go out and spread the word and tell the Forest Service just what he had written. He'd do the rest. Then the chips would fall where they may.

ERM: How did he and Gifford Pinchot get along?

FPK: Oh, terrible! They had a big fight one time--no, it was [Henry S.] Graves who was involved in the squabble with Hopkins, over the percentage principle. The Forest Service was carrying out a control project near Yreka, California. It was in one of those early projects that Hopkins's percentage principle came under debate. Ralph Hopping of the Forest Service control unit took the view that the percentage principle did not apply. Hopping contended it was necessary to control every infested tree. Hopkins's percentage principle argued that control could be

established by removing 50 to 75 percent of the infested trees. Hopkins had hot words with Chief Forester Graves over his field man's report.

ERM: I have heard that Hopkins made a rather remarkable field trip to the West which began on April 9, and ended June 17, 1899. He visited parts of California, Oregon, Washington, and Idaho and collected in that short period, according to the record, 4,363 specimens and recorded 760 notes. Later it was shown that he had uncovered and correctly recorded most of the important forest insect problems of the region. He published his findings in *Preliminary Report of the Insect Enemies of Forests in the Northwest*.<sup>1</sup> How would you appraise that work?

FPK: Although he was an egotistical man, he was really a genius. To produce a book in such a short time is just remarkable. It has some few errors in it. He really was a genius in his field, something like Edison. He made a profound imprint upon a profession that was just beginning. For a long time, his book was considered the bible of forest entomology.

ERM: Hopkins took a strong part in bringing new people into this field. Some of these men are described in H.E. Burke's 1946 unpublished memoir, "*My Recollections of the First Years in Forest Entomology*."<sup>2</sup> You were one of those who came along in that group, but there were others who came earlier than you. Would you describe some of them? Were you acquainted with C.V. Piper or J. L. Webb?

FPK: Not Piper. Webb did some work on one beetle and wrote an excellent bulletin about his work. Other than that, I didn't know him.

ERM: Who were some of the early people trained by Hopkins that you knew?

FPK: The only ones that I had contact with were Burke and J. M. Miller, and a few of the field workers such as J. J. Sullivan and J. D. Riggs.

ERM: Did you know Dr. Herman von Schrenk who did some work in the Black Hills? Or E. C. Wood who was a staff stenographer?

FPK: No, I didn't know them.

ERM: Did you ever work in the Washington, D.C. office?

FPK: No, I always worked here in the West.

ERM: How would you describe Harry Eugene Burke?

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<sup>1</sup> U. S., Department of Agriculture, Bureau of Entomology, *Preliminary Report of the Insect Enemies of Forests in the Northwest*, by A. D. Hopkins, Bulletin 21 (Washington, D.C.: Government Printing Office, 1899).

<sup>2</sup> H. E. Burke, "*My Recollections of the First Years in Forest Entomology*" (unpublished manuscript, Berkeley, California, 1946).

FPK: Burke (Wickman 2005) was a very conscientious man. He was very quiet. He was a kind man and he was also very much aware of all the people with whom he worked. When he came to visit us, he always inquired, "Now what about so and so?" and "What do you hear from so and so?" He was interested in the men. He liked to go to sleep in the afternoon. When I worked with him up in the attic at Stanford's Jordan Hall, I liked to question him and not infrequently I had to wake him up to put my question. He'd sit there and doze at his desk after lunch.

ERM: He seems to have been involved in many investigations. Apparently, his first important assignment was as a special field agent in codling moth investigations during the summer of 1902. He was then in charge of the Pacific Slope Field Station.

FPK: The Pacific Slope Field Station was at Placerville, California, and Miller was there working with him. Then Miller went up to Ashland, Oregon to work on cone and seed insects. Just to keep it under Burke, they made Ashland a substation of the Pacific Slope station (Wickman 1987). This was the group that I joined in the fall of 1914.

ERM: This was in the Bureau of Entomology. How was the work of the Bureau established in the West, and what was its organization structure?

FPK: At first the Bureau sent out special detail teams from the headquarters office. Everything out here was still pretty primitive as far as management was concerned in the early days. Then there wasn't any idea of establishing stations. There were only field control projects. The first big project was in the Black Hills (Furniss 1997). The next major project was that in northeastern Oregon and focused on the control of the mountain pine beetle in lodgepole pine.

ERM: Let me try to clarify this. In the early days, officers of the Bureau of Entomology were in Washington and there were no field stations, as such; men were just sent out on temporary trips to investigate bug infestations. A little later projects were developed whereby a team of men went to an area such as northeast Oregon and reported their finds and control efforts. Is that right?

FPK: Yes. The first station was at Baker, Oregon and was called the Northeastern Project. Burke was assigned to head that project (Wickman 1990). He hired men to help him develop a program which also involved the cooperation and funding of the Forest Service and the private owners in that area. His men helped him spot the infested trees. When the project was completed, efforts were made to reassign the working force in other areas. Some went to Klamath Falls, Oregon, and others were sent to Yreka, California, where a small station was established in 1911. Later a station was set up at Placerville, California.

ERM: What was the Bureau's relationship to the Forest Service and the Department of Agriculture then?

FPK: Theoretically the Bureau of Entomology had the expertise of forest insect control and the ability to make surveys and recommendations. It also was in the best position, professionally, to see that recommended action was carried out.

ERM: In other words, you are saying it was up to the Bureau of Entomology to provide a plan of action and up to the Forest Service to put the plan into action. But Hopkins was a true individualist and didn't cotton to the Forest Service overseeing his work. There was an open antagonism in the relationship during the early days. Hopkins insisted, "I'll tell 'em what to do and they will have to do it! Was that the true situation or was the Forest Service beginning to develop some research people of its own?"

FPK: The entomological research was all done in the Bureau. The Forest Service left research in its area of special competence to the Bureau. The Forest Service had some men both in Region 6 and Region 5 who took charge of the survey and control work. For instance, Hopping was here at 5 and A. J. Jaenecke at 6. They were control agents. They supervised control efforts under timber management; they were also involved in making surveys. But they did not contribute greatly to research. That was the first development of inter-bureau cooperation.

ERM: How were these special projects of the Bureau funded? Did they receive Forest Service money?

FPK: If any work needed to be done, funds for it had to be appropriated by the Congress, and the Bureau of Entomology had a special assistant, S. A. Rohwer, who worked on the Hill to obtain funding.

ERM: How successful was Rohwer in getting funds for the Bureau?

FPK: The results were not very fruitful. The Bureau lacked strength among the members of Congress and could muster little public support for its needs.

ERM: Did that condition persist even after you became part of the organization?

FPK: Yes. It was underfunded. I had to spend a large part of my time trying to get money to do things. Whereas the Forest Service, with the widespread organization that it had, could muster congressional support and funding much more easily (I am speaking now especially of research money,) we had to make a fight to get any of that. For instance, the first money we received for the Portland, Oregon station came as a result of our work with the Western Forestry and Conservation Association and the Western Pine Association. We went to the WFCA and WPA and the private timberland owners who in turn contacted Senator Charles L. McNary. The senator from Oregon wielded a big bat in Congress, and he used it to promote successfully an appropriation of \$15,000 to set up a forest insect research station at Portland, Oregon. That was the first funding of our experiment stations in the Northwest.

ERM: You were in the military service for two years during World War I. During that time what progress was made in forest entomology in the U.S.? Or do you think it came to a halt because of lack of trained men?

FPK: I really don't know. I think there was some progress. When I came back after the war, I wanted to go into ranching, so I went to San Diego where my father still operated the ranch on which I was born. I stayed out of the Bureau for about two years. But they came after me-and



asked me to return. They offered me twelve hundred dollars a year; I wasn't interested. Then they raised it to eighteen hundred dollars. That was more than I could make on the ranch, so I decided I'd go back to the Bureau. When I went back, I thought I was going to take over the job that Hopping had held and that I was going back to work with the Forest Service.

ERM: What conditions did you find within the Bureau when you returned? Were there any substantial changes?

FPK: No, things were just about the same as far as the financing of it was concerned, and Hopkins was still in charge. He was about to retire and did in 1923. In 1921 we started a pine beetle control project up in northern California and southern Oregon which was the largest that had ever been launched until then. This was the product of efforts by private owners, the Forest Service and the Indian Service to come together. They got an appropriation of \$150,000, a lot of money in those days.

ERM: That was a real milestone not only in financial support by Congress, but also a milestone event in respect to the cooperation that created it.

FPK: At first when I came back, I thought I was going to be with the Forest Service as one of the men who supervised control work. But [T. D.] Woodbury and Miller had decided the Bureau would do all of that, so my job was still within the Bureau. In order to give me some experience on control work, Miller sent me out into the country back of North Fork, California, near Fresno. This was a joint project the Bureau shared with the Forest Service in the Chiquita Basin. I worked all one summer. Then in 1921 with the start of the southern Oregon-northern California project, I was sent up to Klamath Falls, Oregon to take charge of the Bureau's part of that.

ERM: What was your relationship with the local people?

FPK: I was made a member of the board of control for the Southern Oregon-Northern California Pine Beetle Control Project and elected chairman at its first regular meeting on April 8, 1922. I had to form my own opinion and make my own way. The fellow that had made a preliminary survey of the work was A. J. Jaenecke. He was the Forest Service designated control agent. He had made a preliminary survey of the whole project area and had outlined the project subdividing it into three nearly equal areas of interest, the private owners, the Indian Service, and the Forest Service. When I entered the scene I was first involved in helping with the survey by taking one area that was the Forest Service area, and going over it very thoroughly. When the project was ready to go, a board of control was set up with representation of all parties involved. The board was responsible for hiring men, getting supplies, and determining policies. The principal push behind this entire program was Jackson Kimball, secretary of the Klamath-Lake County Forest Protective Association. He was a man that I came to know well. Kimball operated from a headquarters in Klamath Falls. He mobilized the interest of private landowners and got them to urge upon their state legislature representatives the need for passing pine beetle control laws in both Oregon and California.

ERM: Did they seek individual state funding for this work through their state legislators?

FPK: No. There was no attempt to get either state to ante up any of the costs but only to get the states to formally approve a cooperative insect control project in which zones of infestation were established. The laws sought were passed and they provided that whenever 60 percent of the landowners in any given area petitioned the state forester to have their area declared a zone of infestation, then every landowner in that zone was obliged to cooperate in controlling any infestation on his property. Penalties were provided for those owners who failed to comply.

ERM: In what way did the owners have to cooperate?

FPK: They would have to pay their share of the costs of any control work on a pro rata basis. The board of control decided what the boundaries of the zone of infestation were. When the work was done, they divided up the cost among everybody within the zone. The trouble was we just did the work on a small part of the zone, and the people of the whole zone had to pay for their share on a pro rata basis. Kimball's office handled the private share and the Forest Service and the Indian Service handled the federal share of the \$150,000 appropriation separately. The board of control set up a little bit for the Bureau of Entomology to handle our finances for the project.

ERM: How important do you feel Kimball's role was?

FPK: He was really the backer of it all. He was the main push. He organized the private owners and told the state legislature on both sides of the Oregon-California line that they should support the project. He also set in motion efforts for congressional support to fund the project.

ERM: Are there other people who stand out in your mind, who were important in the development of this work?

FPK: Elmer Hall of the McCloud River Lumber Company was very active and a strong supporter of pine beetle control in the California region which helped in the overall success of the project.

ERM: Was some of that \$150,000 available to credit the costs-charged to the private people?

FPK: Not at that time. It wasn't until the 1947 Pest Control Act was passed that a portion of the private cost was paid by the federal government.<sup>3</sup>

ERM: We will want to return to the Forest Pest Control Act later. Did Senator McNary have an important part in getting this congressional appropriation in 1921?

FPK: I don't remember.

RCH: I think it was Congressman N. (J. Sinnott of Oregon who played an important role in financing this project.

ERM: Did any newspapers take up the cause?

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<sup>3</sup> Forest Pest Control Act of 25 June 1947, 61 Stat. 177.

FPK: Of course, the Klamath papers worked for it. They were instrumental in developing public support. It was to their interest because Kimball was essentially a representative of the Weyerhaeuser Company, since his organization was largely Weyerhaeuser. In, some places Weyerhaeuser owned about 90 percent of the property. They had enough influence to make themselves known.

RCH: Stewart Edward White had a very extensive article concerning the importance of the bug problem as early as 1916.

ERM: What was E.T. Allen's role?

FPK: He was head of the Western Forestry and Conservation Association which was an organization of all of the private timberland owners in the states of Oregon, Washington, Idaho, and California. E. T. Allen, an old Forest Service man, was a classmate or contemporary of Pinchot. Actually he was very much opposed to some of Pinchot's Work, but he only discussed that with me privately.

ERM: What was C. S. Chapman's role?

FPK: Chapman at that time was chief forester for the Weyerhaeuser Timber Company which was a big contributor to the Western Pine Association, and strongly supported Kimball in his bug control efforts. Chapman had also been secretary of the Oregon Forest Fire Association prior to going with Weyerhaeuser.

ERM: In the early days, some people argued strongly that you had to light-burn in order to control the bugs. Fire and insect control became a matter of controversy. What do you recall about that?

FPK: My own opinion came down to a point where I was a supporter of light-burning. That wasn't a point of view that was acceptable in those early days. The Forest Service always believed that you had to put out all fires. Later, by comparing burned with unburned, I found that the unburned area was the portion where the bugs moved into. If you didn't burn it out, you had a lot of undergrowth competing with the older trees, and then the bugs would take them. There is quite a bit of difference in a burned area. Right at first there would be more loss on a burned area than on the unburned area due to the reduced vigor in the fire-injured trees, but eventually that would even out. For quite a number of years the fire-burned area would be almost immune to insect damage. In comparing two areas of similar size on the Modoc National Forest, where one had been burned, I found a significant difference in bug damage, with heavier bug damage on the unburned area.

ERM: What were the reasons for such reluctance to recognize fire as a useful tool? Was it because forestry education had too rigidly taught that all fires should be controlled and this was ingrained in the minds of many young foresters at the time?

FPK: I think that was one of the reasons. Now research is coming out to show that the fires were good in many cases. They didn't have the research at that time to back the light-burners up so, total exclusion of fire was taught in the forestry schools and the students believed it. That went on down through the old ranks of the Forest Service from early teachers at Yale University.

ERM: Were you and your colleagues frequent participants in the forums of the Western Forestry and Conservation Association and the Pacific Logging Congress?

FPK: Yes, but the earliest I remember being on the program was in 1926.

RCH: John Miller presented a paper at the, 1921 fall meeting of the Pacific Logging Congress at Willits, California, entitled "*Fighting Western Pine Beetles*," which was published in the November 1921 issue of the *Timberman*.

ERM: Fire concerned the foresters at a much earlier date. When did they begin to really take the bug problem seriously and did they discuss it at their meetings?

FPK: We were fighting an uphill battle to get serious recognition of the bug problem. We tried to point out the terrible bug losses to the timberland owners and managers but nobody would pay any attention until one time, a man came out to the Modoc and saw the losses for himself. Then he believed some of these things. He was impressed to the point that he started a little mill to salvage some of these losses in ponderosa pine. But I think it wasn't until about the 1950s before we got real recognition of the importance of the bug problem.

ERM: Was it not until the fifties that entomology became recognized as something to worry about?

FPK: I don't know, the thing sort of gradually grew, and it's hard to point out just where the idea took over.

ERM: There was a long period of time, two decades or more, after the end of World War I, before your work began to get serious recognition?

FPK: Yes. I was always frustrated. That is a good way of expressing it.

ERM: Was this because you had too little to work with in terms of manpower and laboratory equipment and funding?

FPK: Yes.

ERM: Ralph, in what year did you come into the picture?

RCH: I came into the California picture in the spring of 1938, but I share Paul's feeling of frustration about getting recognition of the seriousness of the problem, which persisted even after the devastating outbreaks during and preceding the Southern Oregon-Northern California Pine Beetle Control Project in 1921 to 1922. Terrific losses were suffered then, and late in the thirties

there was another big outbreak where we lost billions of feet of timber. In comparing the loss from bugs with that from fire, we tried to point out that, as one example, losses from bugs on the Klamath Indian Reservation, from 1914 to 1942, were approximately thirty times as much as losses from fire. Since then we have estimated that losses from bugs have averaged about seven times that from fire. Yet we simply couldn't get this story across; I'm just not sure why. It's probably because fire is a spectacular thing. People get all excited and want to run out and put it out. I have seen a lot of spectacular bug outbreaks, such as those recently in Yellowstone and the Grand Teton national parks, but spectacular to me because I was seeing them with an entomologist's eyes. The land manager in this case, the National Park Service, showed little concern and had completely given up any attempt to control the situation. I think we were pretty poor salesmen. I would agree with Paul that it was not until about the fifties that we began to get recognition and adequate support for bug control.

ERM: How about the Federal Forest Pest Control Act?

RCH: This was enacted in 1947 but funding was minimal for the first few years.

ERM: How about state legislation?

RCH: In 1923 the California legislature passed Act No. 3704, generally known as the pine beetle control law. It is identical to the pine beetle law passed by the Oregon legislature in 1922. Originally these acts were passed to provide state cooperation on the Southern Oregon-Northern California Pine Beetle Control Project. The main feature of both acts was that they authorized the states to set up zones of infestation upon request of the owners whereby all of the owners within the zone are obligated to eradicate all the infested trees on their land. The state forester becomes the enforcement agency, but although it gives him authority, the act originally did not provide him with funds to initiate and to perform the work. In 1945 the California legislature appropriated \$10,000 as an emergency fund to provide assistance to the private timber owners in the Burney-McCloud Cooperative Control Project. This was followed in California in 1946 by a biannual appropriation of \$50,000 for cooperation with the private people in both control and detection.

FPK: The principle behind the federal Forest Pest Control Act was similar to the Clarke-McNary Act in that the federal government has an interest in protecting the private owner's timber from insects as well as from fire.<sup>4</sup>

ERM: Was it the basis whereby the federal government would provide matching funds if the state and private owners would put up a certain percentage of the costs?

FPK: Yes.

ERM: Apparently funding was not a consideration when state legislation was first enacted.

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<sup>4</sup> Clarke-McNary Act of 7 June 1924, 43 Stat. 653.

RCH: Originally this was true but as I pointed out earlier, in California, starting in 1945, funds were provided to help share in control costs on private lands. Presently, most of the western states have appropriated funds for sharing in control costs on private lands. Generally, in the past, the formula for cost sharing has been that the states will provide 50 percent; the federal government, 25 percent and the private timberland owner, 25 percent.

ERM: Who were some of the key people responsible for the passage of the federal Forest Pest Control Act?

RCH: Paul Keen played a very important role in the passage of this act, particularly in the wording of the legislation. Other key people in California included.: DeWitt Nelson, director of natural resources for the state of California; Elmer Hall, logging superintendent for the McCloud River Lumber Company; J. Wilcox Brown, forester for the Scott Lumber Company; Ernest L. Kolbe, forester for the Western Pine Association; and members of the State Board of Forestry for California. Nationally, Congressman Clair Engle was particularly effective in the enactment of the legislation.

ERM: How did you go about getting federal action, Paul?

FPK: I didn't initiate it but I talked it up a little bit, about getting an act similar to the Clarke McNary Act which would provide cooperation with the private people in the control of bugs as well as disease. It came to a head when the Western Pine Association had a meeting of their forestry committee here in San Francisco. Rex [So Rexford] Black who was chairman of his county committee urged Stuart Moir, then forester for the Western Pine Association, to support federal legislation with this provision in mind, since they were then ready to get action on it.<sup>5</sup> I reported that to my bureau chief in Washington. Then the chief called me back to Washington to see what they could do about getting legislation introduced ahead of the Pine Association. I went back and started to draft up a law, then Rohwer entered the picture. He had drawn up something that conformed to what the Bureau thought was needed. Although I did not fully approve of this version, I decided to go along with it. Then we took it to the chief's office for his approval.

ERM: Who was the chief at that time?

FPK: P. N. Annand. Then I got cold feet about what we were proposing, and I told Dr. Annand at the time that I was afraid that we were opening up a Pandora's box of troubles. The Congress would appropriate millions of dollars for control but nothing for research. The tendency would be for the control agencies to spend money foolishly, without proper research background.

ERM: The Forest Service now gets \$11 million for insect control?

FPK: The current amount appropriated to the Forest. Service includes control of both insect and disease for all federal agencies as well as funds for assistance to private timberland owners. It also includes detection and biological evaluation.

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<sup>5</sup> See also Private and State Forestry in California. 1917-1960, an interview with S. Rexford Black conducted by Amelia R. Fry (Berkeley California: University of California and the Forest History Society, 1968).

ERM: How much is for research?

RCH: The current Forest Service budget for forest insect research is about \$8 million in regular funds, nationwide, and at the Pacific Southwest Forest and Range Experiment Station, for what used to be the old division of forest insect research, about \$288,000. In addition there are now three rather sophisticated, crash research projects on three different insect problems, including the gypsy moth, the tussock moth, and the southern pine beetle. These three projects are funded by a special appropriation of \$10 million annually. The philosophy on these special projects is to concentrate all out effort for several years in an attempt to come up with some practical solutions.

ERM: Has the tendency been to deal with problems at the times of crisis only, rather than taking preventive action?

RCH: Yes, this has been one of the fallacies in our past research efforts, to get all excited about a bug problem at the height of an epidemic. Yet we have failed to recognize that what we need is a study of insects at the low level to determine when we can expect outbreaks and to be ready to take early corrective action. This is particularly important with the tussock moth.

ERM: Has there been enough experience with cyclical out breaks to provide insights as needed to anticipate recurrences? Or are they totally unpredictable?

RCH: They are not totally unpredictable. From past experience we have some information on the cyclic behavior of some of our defoliators. For example, our experience has been that we can normally expect an outbreak of the tussock moth about every seven years, but we cannot predict where to expect such an outbreak. We are hopeful that the results of our special crash programs will supply us with information which will tell us when and where to expect outbreaks. The western pine beetle is another pest which appears to have a definite cyclic tendency.

ERM: Paul, as you survey the work of your life, what project would you single out as the one from which you derived the greatest sense of accomplishment?

FPK: I think that the outstanding thing was the development of the Keen Tree Classification of Pine Susceptibility (Keen 1943). I started developing it with the Dunning tree classification. We took sample cruise strips through a ponderosa pine forest to observe the character of the trees in Dunning classes which were killed by insects. We found that the vigor of the infested trees was consistently poorer than the trees which were not attacked. I then developed a ponderosa pine tree classification based on Dunning's concept of age and vigor. I established four tree classes: 1, young; 2, immature; 3, mature; and 4, overmature. I split each age class into crown vigor classes: A, vigorous; B, good to fair; C, fair to poor; and D, very poor.

ERM: Was there anything in research with insect pests of a comparable nature being reported from anywhere in the United States or Canada at that time?

FPK: Not at that time;

ERM: You were developing something entirely new in the way of identifying the roots of the problem. This was a contribution of basic research into the science of forest entomology, and the application was strictly restricted to ponderosa pine, correct?

FPK: Yes, that is right.

ERM: Did your work have any spin-off effects in the study of other forest pests on the West Coast? Or was it applicable only to the pine beetle?

FPK: As I recall, my tree classification applied only to the western pine beetle. There were not any relationships to the mountain pine beetles. For instance, we tried to do the same thing with sugar pine following the request of Waller Reed who said, "Now if you will just develop a similar classification for sugar pine, why, you will really have something." We tried it but it didn't work.

RCH: Currently, George T. Ferrell, at the Pacific Southwest station, is trying to develop a risk rating system for white fir. I did some risk rating of white fir from 1938 to 1952 on 36 twenty-acre sample plots as part of my climatic study at Hat Creek, and concluded that there was a close association between tree vigor and subsequent loss in white fir caused by the fir engraver. Paul was the first in 1936 to demonstrate that losses in ponderosa pine from the western pine beetle could be reliably predicted based on tree vigor. In 1938 Salman and Bongberg developed a risk rating system for ponderosa pine based on tree vigor alone but differs somewhat from Paul's system.<sup>6</sup>

FPK: The Forest Service used my classification for the first time in the Burns district in Oregon as part of their maturity selection system of cutting. A field inspection of the marking was arranged which included Edward I. Kotok, director of the California Forest and Range Experiment Station, and Ernest Kolbe, who at that time was working for the Forest Service, Kotok was quite concerned about the marking and made the following comment to Kolbe on their ride back to Klamath Falls: "Well, Paul, Keen ought to be chastised. He ought to be censured by the Society of American Foresters for devising such a scheme to high-grade the forest." I was also very much concerned about their high-grading system myself and felt that they were using my system out of context and not the way I had intended it to be applied.

RCH: Paul, they were not following your suggested program in respect to the type of trees to be removed. In other words, they were taking only those trees with a high economic value, and not those in poor health. Is that right?

FPK: Yes.

ERM: How did entomologists and foresters originally perceive the western pine beetle problem, and did their views change substantially by late 1930?

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<sup>6</sup> K. A. Salman and J. W. Bongberg, "Logging High Risk Trees to Control Insects in Pine Stands of North-eastern California," *Journal of Forestry* 40, no. 7 (July 1942): 533-539.



FPK: At first the Forest Service didn't pay much attention. They didn't figure that the problem was too serious, and it was not until industry demonstrated the effectiveness of direct control in the Klamath Basin in 1911 that the Forest Service began to carry on control, but then only in a rather haphazard manner.

ERM: How did the entomologists themselves perceive the western pine beetle problem in the early days, say in the early 1900s? And how did your experience in the 1920s alter your perception of the problem?

RCH: In the early days, in the Hopkins era, the entomologists were pretty well agreed that direct control of the western pine beetle by cut-peel-burn was generally very effective, and this attitude and method of control continued until the late thirties. When Paul developed his system in 1936, for the first time we had an indirect method of control, and in 1938 with the Salman-Bongberg risk rating system we had another option with indirect control. There was general agreement among the entomologists that direct control was a temporary stopgap and essentially reduced populations for a year or so but failed to tackle the basic problem of changing the environment through the removal of susceptible trees. By using the indirect approach of removing the highly susceptible trees, we are able to bug proof eastside ponderosa pine stands for ten or more years. Therefore we have now changed our concept of control to the point that if we now have an option of two methods of control, we will use the indirect method in all areas where timber harvesting is possible.

ERM: How do you perceive the western pine beetle problem today?

RCH: Another misconception that we had in respect to the western pine beetle was that as soon as we got all of our virgin timber removed our insect problem would be solved. But we have found lately that we are getting some rather serious western pine beetle problems in our second-growth ponderosa pine stands, particularly where we have a lot of competition. Would you agree with that, Paul?

FPK: Yes.

ERM: During the periods of extensive outbreaks of the western pine beetle in the early days, was there any effort to salvage the infested trees?

FPK: No. At that time there wasn't any method of salvaging. In the early days logging was practically restricted to transportation by railroad, which made it very difficult to use salvage as a control tool.

ERM: Did you have any personal involvement in the Pandora moth outbreak on the Klamath Indian Reservation in about 1918?

FPK: No. John Patterson made a study of that infestation and published a paper on the Pandora moth in 1929.<sup>7</sup>

ERM: How has the history of the Pandora moth developed over your lifetime?

FPK: In addition to the serious outbreak on the Klamath Indian Reservation, other similar outbreaks have occurred on the Arapaho National Forest in Colorado and several places in eastern California. No serious outbreaks of this insect have been reported since 1940. I don't know of any efforts ever made to control this insect. Of course, the earlier outbreaks occurred prior to the advent of aerial spraying. If we were to have an outbreak today, we would probably attempt to control it.

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<sup>7</sup> U.S., Department of Agriculture, Bureau of Entomology, *The Pandora Moth, A Periodic Pest of Western Pine Forests*, by J. E. Patterson, Technical Bulletin 137. Washington, D. C.: GPO, 1929.

## Session 2, November 16, 1974

ERM: Paul, you wrote various bulletins and other publications relating to your entomological work. What was the first thing that you published?

FPK: The first was the *Enemies of California Pines and Their Control*.<sup>8</sup>

ERM: Merritt B. Pratt was state forester then. Would you explain how this happened to be published by the State of California?

FPK: First they proposed that we prepare a bulletin covering the insects that foresters were interested in and that were subject to their controls. The state wanted it to be a bulletin that could be used by their rangers. Independently, I proceeded to get ready for publication a bulletin that covered all the insects in all the forest trees. Then I took it up to Sacramento to have the state approve it, and they were horrified at the size and length of the draft. In manuscript form, it seemed to be a tremendous thing, and they said that so much money would be involved to publish it that they'd like me to cut it down. I then cut it down by the elimination of all trees except the native pines, which were the trees most susceptible to attack and injury by insects. Then I took the revised manuscript back, and they still shook their heads about it and weren't very enthusiastic.

In the meantime, the state had turned over the money that was going to be used to publish the bulletin to the forest experiment station. Therefore, I would have to go to the director, Ed Kotok, to get his approval. Kotok objected to the state publishing this. He said, "Anything like this ought to be published by the federal government. Why should the state put up the money? You ought to take it to the federal government to have them publish it." Everybody had arranged to go with a state bulletin by that time, so the state allotted \$600 to cover the estimated cost. Ed Kotok set aside the \$600 from about \$25,000 which had been allotted to the station from the state. This amount was also not only approved but it was advocated by Rex Black, who at that time was head of the California Forest Protective Association, and that is why Ed finally agreed to allot the money. It was then published by the state and proved to be one of the most popular publications the state had ever gotten out. The original supply soon ran out and Black then came up with enough money to have it reprinted.

ERM: Did you revise the bulletin before it was reissued?

FPK: No, I didn't revise it. It was a reprint of the original.

ERM: In the 1930s you published another work?

FPK: Yes. Another book was supposed to be on forest entomology. As it turned out I did not get my name on the final product although I had a major part in its preparation.<sup>9</sup> It was originated by

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<sup>8</sup> California, Department of Natural Resources, Division of Forestry, *Enemies of California Pines and Their Control*, by F. P. Keen, Bulletin No.7. Sacramento, California: State Printing Office, 1928.

W. J. Chamberlin, who came down to Stanford University for graduate work. He presented the draft to the university as part of his requirements for his doctoral dissertation.

ERM: Did Chamberlin do his undergraduate work at Oregon State College?

FPK: Yes. One of Chamberlin's professors at Stanford, Professor R. W. Doane, reviewed Chamberlin's manuscript and felt that it needed considerable revision before it was published. He felt that it should be considerably expanded and decided that the proper procedure would be to have the book come out under joint authorship of Doane, Chamberlin, Van Dyke, Miller, Keen, and Burke. Doane was professor of biology at Stanford at that time, but he was teaching forest entomology. Edwin C. Van Dyke of the University of California was professor of entomology. H. E. Burke was retired at the time.

ERM: He was formerly senior entomologist for the Bureau of Entomology. You and Miller were also involved in this publication. In other words, the original plan was to have six authors, you, Miller, Doane, Van Dyke, Chamberlin, and Burke. But you and Miller did not get authorship credit. What went awry?

FPK: Both Miller and I were involved in the original concept of the publication. The original plan was that Doane would be the editor and I would be the coeditor. Then there was a big hassle as to how much country should be covered. Van Dyke and Doane wanted to cover the whole country, but the rest of us favored restricting it to western forest insects and that is the way it was finally settled. I was given the task of arranging the sequence of chapters on various groups of insects and of assigning author responsibility. Burke was to be responsible for the flatheaded borers, since that was his specialty. Miller and I covered the western bark beetles, and I also covered the termites. Miller and I ran into a bureaucracy problem in that Washington insisted that the Bureau of Entomology edit the manuscript before approval to publish. We objected to this procedure as did the other authors. Miller and I then withdrew as authors in order to get speedy publication of the book.

ERM: Had you already worked out a contract with McGraw-Hill to publish?

FPK: Yes, Mulford, at that time, was general editor for the foresters' series and he was very glad to approve it to cover the subject of forest insects.

ERM: Did he require that the manuscript be submitted to review by a group of expert readers?

FPK: No, since practically all of the experts in the field of general and forest entomology were involved in authorship. I might add that this book ended up a somewhat of a mishmash because of the diversity of authors. For example, with the bark beetles we approached it from the economic standpoint, while Van Dyke, for instance, approached his subject largely from the entomological standpoint. That was the trouble with the writing of several people, style was so vastly different, and Doane, who was to be editor-in-chief, declined to edit another professor's work.

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<sup>9</sup> R. W. Doane, E. C. Van Dyke, W. J. Chamberlin, H. E. Burke, *Forest Insects*. New York: McGraw-Hill, 1936.

ERM: Although your actual authorship was not acknowledged, I see in the preface that the statement, "Cooperating fully from the beginning of this project, Messrs. J. M. Miller and F. P. Keen." Am I correct when I say that this was a matter of procedure or ruling by your superiors in the Bureau of Entomology who did not want you to go into print, except when they had total editorial veto power over the publication?

FPK: That's right.

ERM: You and Miller proceeded then to write more specifically on western insect enemies of the forest?

FPK: I already had a manuscript of the western pine beetle that I had in mimeograph form, therefore we also needed a manual that would be generally available for the people in the field.

ERM: Do copies of the original mimeographed manuals still exist?

FPK: I have copies.

ERM: What was the next thing you produced?

FPK: *Insect Enemies of Western Forests*, in which I covered all of the important forest insects of the West.<sup>10</sup>

ERM: I see only your name on the title page of that, Paul. Was this strictly your own work? Had Miller dropped out of the picture by then?

FPK: Miller dropped out of that. You notice it says, "compiled by." F. C. Craighead had objected to my gathering all the notes, writing it up, and putting it out in bulletin form with only my name on it. He insisted that I should have "compiled by" on it.

ERM: The copy that I have is a little different.

FPK: That's the later edition.

ERM: The original came out in February 1938, but this is the revised edition of July 1952. It seems to be a much thicker volume. You expanded it considerably, did you not? The 1952 edition is an authored work in which you are cited as the sole author, whereas in the earlier work put out in 1938, it says "compiled by."

FPK: That is a distinction that was hard to understand. I don't know, maybe everything is "compiled by" when you actually get into it.

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<sup>10</sup> U. S., Department of Agriculture, Bureau of Entomology, *Insect Enemies of Western Forests*, by F. P. Keen, Miscellaneous Publication 273, Revised edition. Washington, D.C.: GPO, 1952.

ERM: Because people you are drawing upon work done by other people.

RCH: For which the people involved get credit through reference to their published work. I think it is just a matter of semantics. Paul is really the author of all of these editions.

FPK: In the revised issues I've included the things almost word for word that were in the original.

ERM: I notice that the copy you have here is the author's copy of the second edition. The first edition was issued in February 1938, and it was slightly revised in April 1939. Right?

FPK: Right.

ERM: I notice that this July 1952 edition has a total of 280 pages.

FPK: This one is 205 pages. I have added pictures to it. I don't know just how it was expanded otherwise.

ERM: Where do the original pictures and drawings repose?

FPK: I have here in my author's copy indicated the Bureau number of the pictures and drawings used. I didn't list the number in the publication but I did keep a record number of each picture used.

ERM: Do you have a file of the pictures used?

FPK: No, most of these are all in the Bureau files in the Pacific Southwest Forest and Range Experiment Station, in the forest insect library. While we were still in the Bureau, the Washington Office requested a number of negatives which were never returned. However, the original prints are still available.

ERM: All this now comes under the purview of the Forest Service?

FPK: Right.

ERM: Several years ago the Forest Service, at the suggestion of the Forest History Society, elected to go to the National Archives to seek their help in establishing a collection of old pictures and negatives. Things of this age may already have been transferred to the National Archives where they are identified, dated, indexed, catalogued, and put into a computer bank for quick retrieval.

RCH: Hopefully. In the past we have attempted to get the negatives returned from Washington, but with no success. We have not attempted to get any retrieved under the computer system. We still have most of the original drawings in our forest insect library at the station.

EHM: Paul, have you given any thought to placement of your library and your personal papers in a permanent repository?

FPK: No, I haven't. I don't have most of them. Most of my files were left in the Bureau, in the general files.

ERM: After you completed *Insect Enemies of Western Forests*, what was the next thing you published?

FPK: The next bulletin was one on seed and cone insects. I tried to get Miller to write up the work we did at Ashland, but he said, "I've wasted so much of my life on that, I don't want any part of it." And he never did anything about it. We had abundant notes from all of the old collections that were made and I just compiled them and got out a Bureau publication on the western cone and seed insects.<sup>11</sup>

ERM: Did you do this before or after you retired?

FPK: I did it before I retired.

ERM: At the time of its publication you were entomologist, California Forest and Range Experiment Station, U. S. Forest Service in Berkeley. I notice that in the acknowledgements, you credit John M. Miller and John E. Patterson with a great deal of the work. What came next?

FPK: The next was the *Biology and Control of the Western Pine Beetle*, which was a cooperative project between Miller and myself.<sup>12</sup> Miller did most of the work on that, and that is the reason for his name being on it first. This publication represented a very comprehensive compilation of all of the published material on the western pine beetle, as well as much of the unpublished material in the form of reports of various kinds. Originally we had a chapter on the history of all the work which had been done up to that time, but our Washington Office decided to leave it out, partly because they felt it to be too lengthy and partly because they didn't think it belonged in there.

ERM: How would you describe F. C. Craighead, who succeeded A. D. Hopkins in 1923?

FPK: It's a little hard to describe Craighead because I never cottoned to him. We had so much friction all through his regime that I'm not a very good describer of him. I don't believe it would be very flattering.

ERM: What was the basis of your relationship?

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<sup>11</sup> U. S. Department of Agriculture, Bureau of Entomology, *Cone and Seed Insects of Western Forest Trees*, by F. P. Keen, Technical Bulletin No. 1169 . Washington, D.C.: GPO, 1958.

<sup>12</sup> U. S., Department of Agriculture, Bureau of Entomology, *Biology and Control of the Western Pine Beetle*, by J. M. Miller and F. P. Keen, Miscellaneous Publication 800. Washington, D. C.: GPO, 1960.

FPK: When the change from Hopkins to Craighead was about to occur, I happened to be in Washington. I went there after the completion of the big southern Oregon-northern California control project. Then I felt we were "some punkins." I mean, we felt that we had some influence. When the change came about, we would have liked to influence the selection of the new chief, and it seemed an opportune time to do it then. I joined with Snyder and Middleton in preparing a memo in which we named the prospective people who might be chief, including Craighead. We named different ones that were or should have been possible candidates for the office and described the ones which we thought would be good. Of all the selections, the one that we didn't want was Craighead. One of the reasons was, rumor had it, that Craighead had double crossed Snyder on a planned joint publication which finally came out with Craighead as the sole author. I, of course, didn't actually know anything about the details of the original arguments between Craighead and Snyder.

ERM: How was the choice of a new chief made in those days? Did Hopkins himself have any input into the decision?

FPK: It was really the responsibility of the chief of the Bureau to name the new chief of the division and that's why we were trying to influence the selection. The chief of the Bureau at that time was sort of in a state of flux. [Leland O.] Howard was chief in name only. The chief's duties were split among three "Rasputins behind the throne," as it were. They were A. L. Quaintance, C. L. Marlatt, and F. H. Chittenden. The three of them ran the Bureau.

It was a case of not knowing who your opponent was because you weren't too sure who would be selected. In this memo we damned Craighead. When it was announced that Craighead was the new chief, I wrote him a letter and told him that I had tried to do everything I could to keep him out of the job, but now that he was in, I indicated that I had made a mistake of signing this when I didn't have any personal knowledge that should influence the selection. And as long as he played ball with me, I would play ball with him.<sup>13</sup>

They told me afterwards that he was like an elephant: "He never forgets." So he entered the job with a prejudice against me which took quite a few years to dispel. I had worked myself out from under this cloud to a point where I was considered the favorite, but then I objected to something he did, and I went down the hole again. It was a case of up and down with him. We reached a point in 1946 when we came to a head over some of the things he had done that we sort of revolted against. I, with Miller's help and signature, prepared a letter to object to things and to state the basis of disagreement with Craighead. Then I took it up to Bureau Chief Annand, and he said that he didn't want me to give that letter to him because if I did, then he would have to decide just which one of us would be out. He said that he couldn't have such a serious revolt go on within his ranks. He would have to fire me or Craighead. That was exactly what I wanted him to do. I had come to the point where I was perfectly willing to be fired. But we didn't get any relief.

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<sup>13</sup> Note added by FPK. I also joined in the publication of an article on the selection of the new chief. Thomas E. Snyder, William Middleton, and F. P. Keen, "The Progress of Forest Entomology in the United States," *Journal of Economic Entomology* 16, no. 5 (October 1923): 413-421.



ERM: Was there a general feeling of unhappiness throughout the Bureau on this account? It was not just some personal vendetta that you and Craighead had?

FPK: No, Miller had the same feeling, too. Of course, people who were not affected were the people who were lower than division heads. It was the division or station heads that had to write and make decisions, and we would always run into opposition.

ERM: Can you be more specific about the difficulties you had with Craighead? Can you draw specific examples to show why you felt this way?

RCH: Yes, I was going to suggest, Paul, that if you got your pencil out you could come up with some specific examples to illustrate your point.

FPK: Yes, but I don't know if I would like to go into that. I think that would be better left out.

ERM: That's a very important part of history, though.

RCH: Yes, if it is history, I think even though it may be embarrassing to Craighead, or some other people, it needs to be told. Of course, Ken Salman was another person who had some difficulties with Craighead. Was Ken a part of this revolt?

FPK: Yes. Ken Salman had been hired in Washington and he was sent out here to Miller to take my place. There were a number of people who felt that they weren't considered, like J. A. Beal and H. L. Person. Person quit at the time because a new man was brought in over them. Beal and Person thought that they should have been considered.

RCH: Craighead picked Salman as Miller's assistant.

FPK: Yes, but without Miller's knowledge.

RCH: Yes, I know. When I came to California in 1938, I was working directly under Salman and I got the distinct feeling later that he and Craighead were at odds. It reached the point where Salman preferred charges against Craighead, and as I understand it, Annand gave Ken the choice of resigning or being fired. Ken elected to resign. A lot of my information on this topic is hearsay.

ERM: What year would that have been?

RCH: Salman resigned in 1941, as I recall.

ERM: Was this at the same time as the rupture that Paul was talking about between himself and Craighead?

RCH: Yes, I think it was about the same time.

ERM: Paul, you said that Craighead sent Salman out to replace you. Had you retired or quit or what?

FPK: I moved upwards to Portland to take charge of the new Pacific Northwest forest insect station in 1930 (Wickman et al. 2002). Salman came to Berkeley to take over my work. Word got back to me from one of the survey men working for Salman that his field crew had real problems 'with him in spotting infested trees. They said that the only way they could get back at him was to go out, and one fellow would say, "Hey, Salman, come over here and look at this tree. I don't know whether to spot it or not." He would come over there and tell him, and then the other spotter about ten chains away would go through the same routine, until they ran Salman ragged, and completely worn out. At this point Salman said, "Well, you can all go to hell! Spot it if you like."

RCH: Salman was quite a character. I will have something to say about him later. I felt that he was trying to find flaws in your research, and he tried to get me to help him out. I think Salman sort of poisoned me a little bit toward you. I hadn't yet met you and never realized until now that he came out to take over your job at the Berkeley station.

ERM: Was your transfer from Berkeley to Portland in any sense a case of being kicked upstairs by Craighead, or was it a true promotion?

FPK: No, it was a true promotion. Through efforts by private owners such as E. T. Allen and Senator McNary, we were able to get an initial allotment of \$15,000 to establish the Pacific Northwest forest insect laboratory similar to the Berkeley forest insect laboratory in California. Craighead picked me as the first station leader. Originally, Craighead did not approve of the Portland location. Instead, he favored the establishment of a laboratory in the Southwest. But since the \$15,000 was specifically earmarked for Portland, Miller and I were able to get Craighead to agree on Portland.

ERM: Did you ever have any personal contacts with Senator McNary? Could you characterize his interest and his personality?

FPK: Yes. Senator McNary's personal interest was due to his having a farm near Salem, Oregon. Something was killing the tops of the white firs on his farm, and we were asked to make an appraisal. We soon found out that Chermes was doing the damage. Of course, the Bureau did not have any money for control so we took no action. We got in wrong with him for not doing control and putting his personal trees under protection. He was a little bit crabby the next time we went down there because we had failed to help him out.

ERM: Didn't you explain to him that you didn't have financial resources to do that?

FPK: That didn't cut any ice with him. He said he had done all these things for the Bureau. He thought the least we could do would be to come down and take care of a situation like that.

ERM: Who were some of the other congressmen of the time who showed an interest in entomology besides McNary?

FPK: I don't know.

RCH: Clair Engle was a strong supporter for our program, but that was somewhat later.

ERM: Paul, what were your relations with Thornton T. Munger up in Portland?

FPK: Very good. Munger was director of the Pacific Northwest Forest Experiment Station. We thought that the best place for our office was in with the experiment station, so that was where we had our office, in the Lewis Building in Portland. In fact, Munger helped us get these quarters. I know that Munger is not well thought of in some ways because of his characteristics, but we had very good relations with him. Of course, we weren't right under him; that may have helped.

ERM: What were some of the characteristics that you are referring to? You indicate he wasn't too popular. How did this manifest itself in your view?

FPK: There was a tendency to be small about little things. He was sort of a school-teacherish man, and he was very precise about things. He liked to have everybody do his work with the same precision he had. When the fellows didn't perform, he was quite critical of anybody that fell down. I think their criticism was largely of his personality. They just didn't like the man.

ERM: How well did you know Leo A. Isaac?<sup>14</sup>

FPK: Oh, very well. I remember he was an open and above-board man. He developed a number of things with Douglas-fir, like the way seeds are dispersed. Actually, Leo was a friend of Ernie Kolbe's and mine.

ERM: Did you know Ernie very well?

FPK: Yes.

ERM: How did Ernie relate to your work?

FPK: Not very directly. He was in the Pacific Northwest forest experiment station, assigned to Pringle Falls in the pine region. Ernie didn't have much to do with bugs in his region. There weren't many beetles in that part of the country, so he had no direct contact with us.

ERM: Yet you knew him quite well.

FPK: Very well. We were roommates for about ten years.

ERM: You maintain that contact today, I presume?

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<sup>14</sup> Leo A. Isaac. *Douglas Fir Research in the Pacific Northwest, 1920-1956*, an interview conducted by Amelia R. Fry. Berkeley, California: University of California and Forest History Society, 1967.

FPK: Yes, but he's so busy.

ERM: Did you know Walter [H.] Meyer?

FPK: Yes, Walter Meyer was good. What can I say about Walter? He worked on pine reproduction and growth of ponderosa pine. One of his basic research projects was the stocking of ponderosa pine.

ERM: Could you tell us a little bit about W. D. Edmonston?

FPK: Edmonston was just supervisory, a very nice fellow. He was of the old school and his manners were very courteous. He also believed in taking his leisure. He said, "The government pays you so much to do things and they ought to pay me for sitting on the porch in the afternoon to think." He never did have time to think, he said. He had a good friend, George Hofer. They moved down and worked on an insect control job on the Kaibab National Forest. Hofer and Edmonston were inseparable. Hofer had originally been on the northeastern Oregon project. He was one of these roustabouts that the Bureau hired from scratch. The Bureau would have liked to get some Civil Service status for him. I don't know what status they finally got for him. Hofer was a sort of handyman and very good at all sorts of outdoor things, while Edmonston was more of a dilettante type. Edmonston wouldn't dirty his hands by getting down and grubbing or anything else. He liked to stand off and pontificate about the woes of the world.

ERM: You must have known Gus [G. A] Pearson, too, down at the Fort Valley station. How did you get along with Gus?

FPK: We didn't have much chance to get along. I met him on only one or two occasions when he was up on the Kaibab. He came over and looked at the work and his ideas were quite dominant. He took positions that were very sharp and I didn't think were tenable. He'd stick by them through thick and thin.

ERM: What positions did you disagree most strongly on?

FPK: I don't remember now disagreeing with him on anything very strongly.

ERM: What can you tell me about J. M. Miller?

FPK: Miller (Wickman 2005) was sort of Lincolnesque in his bearing. He was a tall, thin man. He was a very dedicated man. He believed in his work and if anybody was doing anything besides just what he was supposed to do, he was critical. He always looked down his nose at any deviation. For instance, if you took Sunday off to go fishing, or if you took time off to do anything except work, he didn't like it. He was completely dedicated to his work. He was very forgetful and as a consequence, when he would go out in the woods, somebody would have to follow behind to pick up his glasses or cameras. He'd take off his eyeglasses and leave them on a stump somewhere.

ERM: You had to be in the field a good deal of your time in those early days. And most of you were married. Did your wives accompany you or did they stay behind at home?

FPK: I wasn't married at the time. That was a period when I was too busy to get married. I didn't get married until after I retired. But I didn't see how anybody could be married, have all the doings of family life, and make it compatible with your profession. To answer your question about the wives accompanying their husbands on the job, this was completely forbidden, except for field headquarters such as Black's Mountain, Hat Creek, and Miami.

ERM: Were a large number of bachelors involved in this kind of work? Or did most of them have wives living somewhere near the station?

FPK: The younger fellows, the temporary men on our field crews, were single men for the most part. I guess I was the only bachelor on the permanent staff.

ERM: From a picture you have, John [E] Patterson strikes me as being a very dapper figure.

FPK: Patterson was an exceptional man. He was very gifted in photography. He was originally hired to do the photographic work on our jobs. He had been a professional photographer in Ashland, Oregon before he came with the Bureau. He had no professional training, but he later became an outstanding forest entomologist.

ERM: James C. Evenden was another man who had some inputs into your southern Oregon-northern California project. Can you describe him?

FPK: Evenden was a competitor of mine. We came into the Bureau at the same time. We both had taken the entomological ranger examination and both passed. So our backgrounds were much the same. Jim graduated from Oregon State with a degree in forestry. Then he was assigned to the Northwest and to Missoula, Montana. The Bureau established a forest insect laboratory at Coeur d'Alene in 1919 (Furniss 2007), and Evenden was placed in charge and worked in that capacity until it was abandoned in 1954. We only met occasionally when our jobs or territories overlapped or when we had mutual problems. Jim was a self-made man in away. He was a very dominant figure. He had his men trained to do just what he wanted them to do.

ERM: What about W. J. Chamberlin?

FPK: Chamberlin was sort of a likable individual. He was very enthusiastic about his work but had a tendency to publish articles rather hurriedly, which resulted in many errors. I charged him one time with having published without due regard for the truth, and he defended himself with the excuse that he didn't have time to check them over. He wanted to get something done and didn't have time to spend checking it for errors.

ERM: How about George R. Struble?

FPK: Struble, of course, was one of our original men in Berkeley. He originally came on as a temporary employee when the laboratory was located at Stanford. He did good work after he was assigned to a problem. Just give him time and he would come through all right.

ERM: What about Jack Bongberg?

FPK: He was another of our Berkeley men. His name became famous by going in with Salman and publishing their system of risk rating ponderosa pines. He was a very pleasant fellow. He was secondary to Salman in that regard.

ERM: I understand Salman differed from you in his approach to the subject. In a sense he was a strong rival of yours. Can you tell us a little bit about that?

FPK: They came out with their risk classification. I thought it was just about the same as my tree classification. I took this matter up with Miller. I didn't object to people coming in and doing a better job, like making a better mouse trap, but I didn't like the idea of just abandoning everything that had been done up to that time and starting something new. That is what they seemed to do with their risk rating. Really, their classes of vigor of trees all complemented my tree vigor from ages A, B, C, and D.

ERM: Was that just another way of saying the same thing in your view?

FPK: That is what I thought it was, and we had a hot argument. I remember going on an automobile trip with Miller and arguing my point of view all very vociferously, and Miller, just in his quiet way said, "Well, we are going ahead and do it just the way we had agreed." He wouldn't accept my argument. Miller was the pass. Then I got together with Bongberg and arranged to compromise so that my tree classification meant the characteristics by the inherent vigor of the tree, and theirs meant risk of attack by insects 1, 2, 3, and 4: with risk 1 and 2, low risk; and 3 and 4, high risk. Later in classifying of trees on plots, we'd use both classifications. My classification would designate the age of the tree and its position in the crown, and its character as to whether it was a very strong grower or whether it was a poor grower. In contrast, the Salman-Bongberg system would show the current health of individual trees.

ERM: Is that composite of the two systems now applied in practice in this region?

FPK: I don't know what they do now.

RCH: I think in California, Salman's sanitation salvage program became a part of the policy of the Forest Service in their management of eastside ponderosa pine stands. This policy was adopted about 1940 and was used in the initial cutting cycle. Many of the major private companies, operating in the ponderosa pine type, also adopted risk marking. As I understand it, Paul, in Oregon and Washington they tended more to use your tree classification on their pine management, didn't they?

FPK: Yes.

RCH: It seemed to me that there was a different philosophy in the two regions. Of course, Paul was very popular throughout the Northwest. I think the timber operators in that region felt that your program was pretty adequate to meet their management needs up there.

FPK: I think you are right. Here they used Dunning's classification of pine instead of mine, and also added Salman's risk rating. But, up in Oregon and Washington, they accepted mine for the classification of pine stands, and then they would add risk to it. This I tried to avoid by reaching this compromise.

ERM: You had a lot to do, I understand, with the initial efforts to use the airplane in research in your field. Can you tell us a little about that?

FPK: Both Miller and I were interested in the possibility of using an airplane for taking pictures of insect killed trees. The first work was done in cooperation with the army at Christie Field over here in the Presidio. The army had a plane and they took us up over the City and flew us over some forested areas and we took pictures of trees. That was in 1926, as I remember.

ERM: Did you take the pictures or did an army aerial photographer take them?

FPK: I took the pictures. Later on, we flew over forests where there was an infestation. This was on the Sierra National Forest near North Fork. Miller used the plane in that operation. Then I went up to the Modoc National Forest in a small plane with the pilot; and leaning out of the side of the plane, I tried to take pictures of bug trees. I remember being in the slipstream of the motors when I was trying to take pictures. We had a sample plot marked on the ground by crosses of newspapers at different checkpoints. Then I tried to get pictures which would cover the designated plot. When I was ready to take a picture, the pilot would turn the nose of the plane up and he would stall the motor. It was a pretty hairy experience, and by the time I got back on the ground, I was sick to my stomach. It really wasn't very pleasant.

ERM: Did Stuart Moir of Western Pine Association have any influence on you in the use of airplanes?<sup>15</sup> Stuart came out of eastern Canada and had been a good friend of Ellwood Wilson, the famous Canadian forester. Wilson came back from World War I imbued with the idea that aerial photography and aerial surveillance of forests was the thing of the future, and Moir captured some of his enthusiasm for that. You knew Stuart, of course. Did you capture any of that from him, or was your enthusiasm for aerial surveillance and photography something that developed quite independent of him?

FPK: My interest was quite independent of him. I didn't know that Stuart was interested, really.

ERM: Tell me something about W. E. Glendenning.

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<sup>15</sup> See also typed transcript of tape-recorded interview with Stuart Moir conducted by Elwood R. Maunder, Forest History Society, Santa Cruz, California, 1958.

FPK: Glendenning was quite an individual. He had been a farmer and had been working for the Southern Pacific Railroad. He came into the work to check the Southern Pacific's holdings near Yreka, working on the Craggy and Barkhouse areas. He was kind of a rough-and-ready fellow.

ERM: What was your impression of P. C. Johnson?

FPK: Phil Johnson, another of our Berkeley men, was a very meticulous fellow. He was very good at drawing maps. He was a pleasant fellow. He got mad at me once. One time he wanted to extend the regional surveys of all areas by using road side strips. He spent the whole summer putting in stakes and marking them up meticulously just on the Sierra. The survey crews would later drive along these marked roads and count the number of infested trees on a five chain strip on each side of the road. They would then compute the number of infested trees per acre and apply this factor to an estimate for that portion of the forest. Phil spent the whole summer putting in very meticulously painted, beveled stakes. Everything had to be perfect. I thought that the way he had done it was a waste of time, so I demoted him and put him to doing something else. He resented that and when the Bureau chief came out, he told him his troubles.

ERM: How about Bill Wilford?

FPK: Bill Wilford was a very nice fellow. He did meticulous work. He worked for me for a while, on what was to be the Tillamook Burn. He had his wife, Bea, with him. They were new to the West and at their west side forest camp had a problem getting a fire started, so I had to help them out. He went down to Mexico and climbed Popocatepetl Mountain. He took quite a tumble and broke both his legs. Both he and his wife considered it a lark.

ERM: What do you recall about Noel Wygant?

FPK: He was one of the men who moved to the Berkeley laboratory from the East. He was a meticulous fellow for research, did good work, and was promoted to take charge of the Fort Collins forest insect laboratory when it was reactivated in the early 1950s. The only thing I objected to was that I had written to him to get him to provide information and pictures on the forest insects native to the Rocky Mountain region, but he never did answer me and rumor has it that he wanted to put out a book himself.

ERM: What about J. S. Yuill?

FPK: Yuill was a very thorough man. He was one of our original men. He was a specialist in chemicals and got his training in chemistry rather than entomology. He did a lot of work with Patterson in tree injection. After his return from the service he was transferred to Beltsville where he was in charge of the Beltsville laboratory.

RCH: He was particularly active in developing a technique for applying insecticides from the air. He did a lot of work with Bob Heller in that field.

ERM: What contact did you have Colonel William B. Greeley?



FPK: I knew Greeley quite well. We served together on the national council of the Society of American Foresters. He would never believe anything bad about a man. He would always take the positive side. He was very forceful in his viewpoints and he had a lot of very good ideas, and he would state them forcefully, so they were mostly accepted. The thing was that he wouldn't agree that John Woods had ever done anything that was a little fishy. He thought it wasn't our place to look into that. The society wanted to honor Woods for something, I don't remember what it was now, but I objected because it was rumored that Woods had mislabeled some tree seeds which had been sent to foreign countries.

ERM: But Greeley did not take a negative view of Woods?

FPK: No. He had always been a strong supporter of Woods and was always loyal to him. He wouldn't believe that he could do any wrong.

ERM: You must have known David T. Mason and his partners, Donald Bruce and James Girard.

FPK: Yes. Dave Mason was a very likable fellow. He was pleasant to meet and he always wore a smile. One time I did some work for one of their customers in the consulting business and he wanted to pay me. I told him, "No, you can't do that because I am a government employee and can't accept it." I thought it was a little bit strange that he would make such an offer.

Don Bruce was very enthusiastic about mathematics. He was a great man to work on figures. He was also interested in good music and he had a wide selection of symphonies in his apartment. I got an extensive musical education by attending sessions he had at his home and became quite a collector myself of symphonic records. Bruce was a consultant for the Hines Lumber Company and helped Axel Brandstrom when he was working on his maturity selection system. Then Bruce suggested that they use my tree classification to make a more equitable distribution of the classes so that it breaks down easily, and therefore they could make an analysis of a stand more easily. That was the thing that gave my tree classification quite a boost in the Forest Service and industry. I didn't agree that the maturity selection system was anything but a high grading of the forest, but they just naturally wanted to get the most for their money, and the maturity system accomplished that objective. I pointed out earlier that I had quite a beef with Ed Kotok because he felt that by using my tree classification I was favoring high grading, which of course, I was not.

ERM: Kotok was always highly suspicious of anything involving industry, was he not?

FPK: Yes.

ERM: How would you characterize his brother-in-law, S. B. Show?

FPK: I didn't know Show very well but I knew Kotok very well, and you may remember that I had quite a beef with him in getting him to approve the allotment of \$600 of state funds to publish my early work on forest insects.

ERM: I have an impression that the Forest Service acted in an adversary relationship to industry; whereas the Bureau was less of an adversary.

FPK: They weren't an adversary at all. The experiment stations didn't have a product to sell, so they aren't holding out anything.

ERM: The Bureau did not have any lands to manage or any products to sell from the land, so you were not in the same relationship as the Forest Service which did.

FPK: Yes.

ERM: There was a period, it seems, in Forest Service history when the Pinchovian group was dominant throughout the Service, and gradually another group began to develop. This group, of a recent vintage and training, became a little more conciliatory toward the industry. Is that a fair evaluation?

FPK: I think so. The Bureau was thought very highly of by industry, like Weyerhaeuser and the McCloud River lumber companies. Ralph R. Macartney once said, "They ought to turn the Forest Service over to the Bureau. They would be a much easier bunch to deal with."

ERM: How about H. L. Person?

FPK: Person was one of the early men in the Bureau. He was a little fellow who tended to be a bit aggressive in stating his views, as a little fellow often is who has to stand up for his rights. When Salman showed up, Person quit and went into the Forest Service. Person did some very good early work in developing the concept that tree vigor had a very important bearing on their susceptibility to attack by bark beetles.

### Session 3, March 11, 1975

Ralph C. Hall: Paul, some questions came up in editing the earlier tapes. One was the formation of the forest school at Cal, when and how it started.

F. Paul Keen: First, there was a club formed at the University of California at Berkeley of men who were particularly interested in forestry. They invited different men to come in and talk to the club about the possibility of starting a forest school. One of the early men invited was George M. Cornwall, editor of the *Timberman*. The club began to put pressure on the regents to okay a forest school and get money for it. I was president of the club one year and it was during that time that the regents agreed to establish a forest school. The first school was established in 1914 with Walter Mulford, who had been at Cornell, selected as dean. Mulford's first appointee was Merritt B. Pratt who later became state forester. Pratt and Mulford gave the first classes, but since I was graduating that year I was unable to take advantage of this program. I was signed up as a pre-forestry student and took a number of supporting courses, such as mathematics, physics, economics, geology, and botany.

RCH: Who taught botany?

FPK: W. L. Jepson, who at that time was writing his book, *Manual of Flowering Plants of California*. I was fortunate in being hired as botanist in seed collecting by the U. S. Department of Agriculture. I got a number of plants that were new to me, but I had a hard time getting an appointment with Jepson to help out by identifying them.

RCH: Who were some of the other men in, the club promoting the establishment of the school?

FPK: A. E. Wieslander, Frank Herbert, Knowles Ryerson, W. P. Smith, Joe Sanders, and Will Matthew were all strong supporters of the program. Other charter members of the club included Vance Brown, Carroll Gamey, Ray Holeman, Leo Meyers, Ralph Nodin, Russell Robinson, Ovid Sears, and Harry Yates.

RCH: Historically, these are pretty important figures that you mentioned.

FPK: I have several pictures of a field trip we took into the redwoods at Muir Woods. Several of these people are in the pictures.

RCH: You remember we had a little question about Hopkins's percentage principle and Graves's part in it. As I remember, Hopping questioned the percentage principle and I think he passed his concern along to Graves. Do you remember what Graves did about it?

FPK: Graves apparently told Hopping to get on the ball and question it. Hopping said that he had plenty of experience with control and the best procedure was to try to get every beetle. I don't remember too much how that turned out.

RCH: I believe that Graves finally came out in the field, in the Klamath area, to check the matter out, and was convinced that Hopkins's principle was working. Graves then returned to Washington and issued a directive that the Forest Service would follow Hopkins' advice.

RCH: What about the funding of the Portland station? The original allotment for that was \$15,000. Is that right?

FPK: Yes, that was the amount originally set up and then for a few years it was about \$13,000. Later on we got additional funds. The Berkeley station was promoting funds at that time. J. M. Miller used some of Patterson's pictures as promotional material, with some of these in the Bureau chief's office in Washington. There were federal appropriations made for the regional laboratories of the Bureau, but the Berkeley lab got the largest part of these.

RCH: When you went up to take over the Portland lab, who did you take with you?

FPK: I took J. A. Beal and W. J. Buckhorn, and for a while this was our total staff. Originally we did not have a clerk, so I had to do all typing of reports and everything. We were in the Pacific Northwest Forest and Range Experiment Station, and the theory was that they would do our typing but they were overloaded, so I hated to ask them to do anything except for some important reports, which they did type for us.

RCH: How did you manage to operate a three-man station on only \$13,000 annually?

FPK: That was a low point.

RCH: Yes, that was a low point, when about budgets today and budgets then. Was Beal still with you at that time?

FPK: Yes.

RCH: Your budget had to include your travel, too, didn't it?

FPK: It included everything, and I remember we had to cut our crew for surveys.

RCH: When did you go to war?

FPK: From 1917 to 1919.

RCH: What was your important role after the war in the Southern Oregon-Northern California Pine Beetle Control Project?

FPK: When I first arrived, there were three Bureau men involved, including myself, Evenden, and Patterson. Jaenecke had made a report on the whole thing, and after the project got going, I was designated as the Bureau representative and later was elected chairman of the board of control. The board of control was made up of the following members: I was chairman and represented the Bureau of Entomology; Rex Black was secretary; J. F. Kimball represented the

Klamath Counties Forest Fire Association and other private owners; G. O. Brown and W. G. Durbin represented the Forest Service; J. A. Howarth represented the Indian Service.

RCH: Rex was the kind of individual who liked to take a lot of credit for himself. You got along pretty well with him, didn't you?

FPK: Oh, yes. We had rooms right next to each other at the same hotel and we used to go skiing and things like that together. We're still good friends. He lives in Palo Alto, California now. He's about ten years younger than I am. He ended up in charge of the California Forest Protective Association, which he ran for a number of years. Then he became chairman of the California State Board of Forestry, as representative of the FPA. Then he tried to get rid of State Forester Pratt. There were a lot of repercussions from that deal. The state finally decided to keep Pratt but there was one group who wanted to chastise Black.

RCH: As I recall, they started procedures against Black for unethical practice as a member of the Society of American Foresters. Do you remember how that turned out?

FPK: The SAF appointed a committee, headed by William B. Greeley with Thornton T. Munger and one other, to review the case and advise as to the merit of the charges. This committee recommended against any action and dropped the charges. Rex had been quite active in SAF up until that time, but he dropped out after that. Emanuel Fritz was one of the people who investigated the charges.<sup>16</sup>

RCH: I had another question concerning the southern Oregon-northern California project. Who was responsible for control action for the Forest Service in California?

FPK: Durbin had this responsibility in California, where the control work was done in the Goose Lake area of the Modoc National Forest.

RCH: Durbin later came down to Hat Creek to straighten out a beef the local people had with the Forest Service. He was a good pacifier and commented later that he couldn't see but what the Hat Creek people were a just people.

RCH: Do you recall the article in the *Lumberman* in 1916, by Stewart Edward White, in which, among other things, he was quite critical of the government for their lack of concern about insect problems? He also advocated light-burning as a solution to some of the insect problems.

FPK: Yes, I remember it, but at that time I wasn't interested much in light-burning. It didn't mean anything to me so I didn't react to it. I remember, though, that Miller reacted for the Bureau, and was very critical of White's position. He was up in arms about it. But I didn't join Miller in his high concern. I didn't feel that light-burning had any implications for our work at that time. White was critical of the federal government, and I am assuming he was thinking about the U. S.

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<sup>16</sup> For further information see Emanuel Fritz, Teacher, Editor and Forestry Consultant, an interview conducted by Elwood R. Maunder and Amelia R. Fry. Berkeley, California: University of California and Forest History Society, 1972.

Forest Service and the Bureau of Indian Affairs, in that they were failing to deal properly with their bug problems. He cited the control work being carried on by industry in comparison with the work being carried on by the Forest Service, and concluded that the Forest Service wasn't holding up their end of the stick.

RCH: Do you recall the reasons for the Bureau of Entomology and Plant Quarantine being phased out?

FPK: No, I don't know except that it was part of a general reorganization move under Eisenhower.

RCH: With the old Bureau out of the picture do you know the reason for the Division of Forest Insects being placed in the forest experiment stations?

FPK: I think that Ed Kotok was the key figure in that decision.

RCH: I know there was a question at one time as to whether we might go into the Agricultural Research Administration [Agricultural Research Service]. Did you want to talk about your Berkeley experience?

FPK: I never did consider myself more than a visitor to Oregon, although I spent most of my working life in that state. I never cared to own property there. Being a native Californian, I always thought that someday I would go back there to live. When Miller, who was in charge of the Berkeley laboratory, decided to retire, he asked me if I would take over and I readily accepted. I started moving on November 1 and left Portland on November 6, 1942 and arrived in Berkeley on November 10. The Berkeley station consisted of a well-run organization with the following men: J. M. Miller, in charge and ready to retire; John Patterson, Ralph Hall, Jack Bongberg, Phil Johnson, George Struble, Stu Yuill, Charles Eaton, Don DeLeon, and Howard McKenzie; plus the administrative staff of the chief clerk, M. L. LeBallister, and secretary Lois Weaver. Since I had working connections with the Oregon operators, I was assigned to be a super-chief, in charge of both the Portland and Berkeley labs. To carry out my responsibilities, I named Patterson as boss of the Berkeley lab and Bob Furniss in the same capacity for the Portland lab. I devoted a major portion of my time to working out cooperation with private owners in both Oregon and California. During the heyday of the CCC [Civilian Conservation Corps] and ECW [Emergency Conservation Work] programs, enough money was set aside to build two field laboratories, one of these at Hat Creek in northern California, attached to the Hat Creek Ranger Station on the Lassen National Forest. Ralph Hall was in charge of the Hat Creek lab, where they worked on problems of bark beetles in ponderosa pine. The other laboratory was located at Miami, attached to the Miami Ranger Station on the Sierra National Forest. George Struble was in charge at Miami and concentrated on insect problems in sugar pine. The two field labs were open from June to September. A considerable amount of the responsibilities at both stations included advice and assistance to all classes of ownership, both federal and private.

RCH: You mentioned cooperation with industry at the field laboratories. I know that you devoted a lot of your time working with industry, and developed a fine reputation with these people. Can you tell us a little bit about your work with industry'?

FPK: I worked very closely with industry in connection with the southern Oregon-northern California project. One of the people who was particularly interested in that project was Jackson Kimball, secretary of the Klamath Lake County Forest Protective Association. Two other key industry people were Macartney and [Hugh] Campbell from Weyerhaeuser Company.

Later when Beal was assigned to the Portland lab, he was assigned to work with Weyerhaeuser on an Ips beetle problem which they had.<sup>17</sup> He worked out of one of their logging camps with the company furnishing quarters and meals. The Weyerhaeuser Company was very cooperative in everything we wanted to do. Later on Charlie Bedard worked on a cooperative job with Weyerhaeuser out of one of their camps in the Bly area. Some of our other cooperators in California included Waller Reed, chief forester for Collins Pine Company at Chester; Elmer Hall, logging superintendent for the McCloud River Lumber Company at McCloud; Ken Walker of the Red River Lumber Company at Westwood; and Bill Welder of the Fruit Growers Company at Burney.

RCH: I also worked very closely with all of the men you mentioned in California, and particularly with Elmer Hall, whom I consider to have been the dean of loggers so far as insect control is concerned.

FPK: Yes, Elmer was like Kimball in Oregon. We could always depend upon full support from these people when we were promoting additional funds.

RCH: These people were also very helpful in furnishing support for the passage of the federal Forest Pest Control Act. How about other cooperators in Oregon and Washington? How about the Hines Lumber Company?

FPK: They weren't particularly interested in insect control, but were interested in cooperating with us on the testing out of my tree classification. Other good supporters of ours were the J. Neils Lumber Company in Washington, and the Kinzua Corporation in Oregon.

RCH: Another strong supporter for our program in California was J. Wilcox Brown, forester for the Scott Lumber Company in Burney, who was a big spark plug in drumming up support for our Burney-McCloud control project in 1944.

RCH: How about Bill Hagenstein of the Industrial Forestry Association?

FPK: Oh, yes, he was always a good supporter of ours and had a good background in insects by working for us on a temporary basis the year he got out of college.

RCH: Bill is a real good friend of mine and worked as my field assistant in cruising our half-section survey plots in northern California in 1938. Now to get back to personalities, I think we have covered most of them but I don't recall that you mentioned much about Ken Salman, What was your evaluation of him?

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<sup>17</sup> Pine engraver *Ips pini* (= *oregoni*)

FPK: I never met Salman until later, so it wasn't a personal thing, but I heard things about him and he was always in opposition to any of my ideas. He had resigned before I took over the Berkeley station.

RCH: You haven't mentioned anything about Charlie Eaton who replaced you at Berkeley in 1952. What was your evaluation of Charlie?

FPK: My evaluation of Eaton was that he was a very smart fellow and his work would stand up. I thought he was one of the outstanding fellows in our organization. But he was very quick to resent things. He was quick on the trigger. That is why I tangled with him.

RCH: Yes, I also tangled with him several times, but, of course, I was working for him. Although I had a lot of respect for him, I didn't always agree with his stand on certain things. He was a very capable researcher, but only an average administrator. I don't think he was the kind of administrator that you were. He was just not human enough, I suppose.

FPK: He didn't recognize human frailty; he didn't take that into account.

RCH: Of course, Charlie started working under my direction in 1938 as my assistant on the climatic study at the Hat Creek lab. I had the experience of having him work for me and then later on I would work for him.

One real historical landmark in the early days was the control of the hemlock looper which represented the first application of chemicals from the air in the United States. Do you recall much about that project?

FPK: When I went to Oregon, I first considered that the hemlock looper was one of the insects that had periodically swept over vast areas and killed the hemlocks, and it appeared that this insect was on about a ten-year cycle. In 1931 I assigned Bill Wilford down to the Wilson River area in Oregon where earlier outbreaks had occurred, but Bill was unable to find any infestation. No sooner had he gone home, when I got reports that there was a big outbreak up in the state of Washington. We checked this area and found that the timing was right but that the location was wrong. This infestation was all on private and state lands, so we got together with C. S. Chapman from Weyerhaeuser Company and Charlie [Charles S.] Cowan, who was then head of the Washington Forest Protective Association and also with Ted Goodyear who was then state forester for Washington. I recommended control, and we worked up a cooperative control job where we attempted control through the aerial application of calcium arsenic. This was the first attempt to apply insecticides from the air in the United States (Keen 1932). Canada had previously dusted an area from the air using calcium arsenic and had reported good control. Funds for this project were provided by the state of Washington after Ted Goodyear, Cy Collins, Chapman and myself paid a visit to Governor [Roland] Hartley of Washington. Then he carried out a sampling of the area treated by laying out sample plots and establishing a series of drop cloths which would catch any larvae which had been killed by the spray. By counting the larvae in the sprayed and unsprayed areas we were able to determine the effectiveness of the dust. We got very satisfactory results.



RCH: How much dust did you put on per acre?

FPK: Twenty pounds per acre, in swaths 150 feet wide.

RCH: I understand that W. J. Buckhorn assisted you on that project. Is that correct?

FPK: Yes. Buckhorn had the responsibility of trying to get some pictures of the plane applying the dust. He climbed a tree and I was worried, as he cut off branches, that he would have an accident. His safety rope slipped and he cut the rope, but fortunately his axe was not too sharp so it didn't go all the way through. I was pacing up and down on the rocks below and I thought, "Gee, if he falls out of that tree, that would be the end of him." But fortunately he made it without any mishaps. The plane was supposed to come over the area at five o'clock in the morning, and Buck was supposed to be at the top of the tree at that time. He was a little late, but he made it in time to get some pictures. We took movies, but these have been sent up to Ernie Kolbe who is trying to develop a little historical collection as part of the program at the Western Forestry Center at Portland.

RCH: Buckhorn was quite an unusual person, one of the real practical forest entomologists, for whom I had a great deal of respect (Furniss 2000). I can just see him climbing up that tree and chopping off branches. When you were talking about your experiences in Portland, you only mentioned Beal and Buckhorn. Who else was working for you at the Portland station?

FPK: After Beal left, Bob Furniss took over for him. Furniss's activities were mostly confined to the Douglas-fir region, where he soon developed into an expert on bug problems on Douglas-fir. Following the big Tillamook Burn, beetles moved in and caused all kinds of havoc. Not only primary bark beetles, but also wood borers which caused considerable deterioration. Bob teamed up with Jim [J. W.] Kimmey, a forest pathologist, to study the amount of damage to the burned timber from both insects and fungi and later published an article on the subject. (Kimmey & Furniss 1943)

RCH: What is your evaluation of Furniss?

FPK: Furniss was a very good man in every way. He was a devoted entomologist, one thing that was not appreciated by John Miller. Miller didn't feel he was much of a researcher because he always spent time on insects, instead of spending time on the problems involved. But I found him to be very good, and he was always good at meeting people. He was recognized as an authority on the Douglas-fir region. When I was transferred to Berkeley, Furniss took over my responsibilities at the Portland station. Since his retirement he has been working on a revision of my Bulletin No. 273, *Insect Enemies of Western Forests*.

RCH: How about Jack [John M.] Whiteside? He also worked for you, didn't he?

FPK: Yes, he started up there with me.

RCH: Later on, he became head of pest control for the Forest Service at the Washington level.

Can you tell me a little about the half-section regional survey plots? You may remember that you sent me up to Oregon and Washington in 1942 and 1943 to help out on the annual cruise of these.

FPK: The system originated during the southern Oregon – northern California control project in 1922. They were designed to give us some kind of a measurement figure on annual losses per acre for each region. Originally some of the plots covered a full section but later on we settled for half-section plots (320 acres), which were cruised on an annual basis, with each infested tree marked with a bark blaze and numbered to show the date of the kill and an estimate as to whether it had been killed in the summer or winter. The field records then showed the size of each insect-killed tree as well as the year and season of the kill. The records from these survey plots were summarized each winter and a report prepared showing the estimate of losses by national forests and Indian reservations as well as loss by states and regions.

RCH: In 1942 and 1943 Shorty [Clarence] Startt and I cruised the plots on the Klamath Indian Reservation, as well as those on the national forests of eastern Oregon and Washington and on intermingled private land. How many plots did you establish on each national forest?

FPK: The number varied by forests depending on the amount of ponderosa pine. As we got farther north, we would cut down on the plots because we ran into fir type and had a hard time finding a suitable plot to establish.

RCH: Did the Bureau have full responsibility for cruising these regional survey plots each year?

FPK: At first we had the theory that the cruising, as well as the establishment of these plots, would be a cooperative undertaking, with assistance from each national forest or Indian reservation. But this plan soon broke down due to the lack of local interest by Forest Service personnel. It turned out, under actual experience, that the local man from the supervisor's office or local ranger district usually had other duties, such as fire fighting, which made it impossible for us to depend on such help, and we ended up doing the total job ourselves. However, we did get a little help from the ECW and CCC programs. We had a training camp up on the Metolius River for the boys from ECW and CCC, and we trained the crews before we sent them out to do the cruising.

RCH: We had the same regional survey system in California, which started a little later than yours in the Pacific Northwest. Our system started in 1930, but was abandoned after our transfer to the Forest Service in 1954. I think it is rather important that in those days we did have some factual information on which to base estimates of losses from insects. Today we don't have that kind of information. I had a big argument with Charlie Eaton, after we were taken over by the Forest Service, when he said, "Well, now that we're in the Forest Service, they now have the responsibility for surveying all kinds of damage and for coming up with estimates of timber volume and losses, so it's the responsibility of the survey people at the station to do this work." But I always felt that was a mistake. How about you?

FPK: Well, I also thought it was a mistake for the Forest Service to take over the whole thing because they didn't have the interest in it. What we were interested in was the rise and fall of epidemics over long periods of time, and the Forest Service survey people had no interest in that subject.

RCH: That's the way I felt about it, too, and on top of that the people that were running the surveys at the station had very little background in being able to tell what killed a tree. As you pointed out, we had a real interest in accumulating this type of information and had been doing it for a number of years. I always felt that it was a very serious error in dropping those survey plots. What is your general evaluation of our take-over by the Forest Service?

FPK: One advantage was that funding was better with the Forest Service taking over that responsibility. One of the big disadvantages was that we didn't have the same independence that we enjoyed while in the Bureau, when we could criticize the Forest Service as well as any other agency if they were out of line. Often in the old days I was called upon to be an impartial judge of the work of several agencies. I could express my opinion of their work, and sometimes the Forest Service would be at fault and other times it would be the Indian Service or the National Park Service. I didn't have to pull my punches in making an evaluation of control strategy.

RCH: I felt that that was another minus for us. We did lose a lot of our autonomy. When we were in the Bureau, I think the industry people felt that we were not biased in any direction.

FPK: Like my position when I was chairman of the board of control in the southern Oregon-northern California project--I could criticize the Forest Service as well as the Indian Service and put the same emphasis on whether the private owners were doing it or the Forest Service was doing it. It made no difference. But being in the Forest Service, I wouldn't have had the opportunity to be boss of the whole thing.

RCH: You also played an important role in the formation of the Western Forest Insect Work Conference in 1949. Can you tell us a little bit about how this organization got started?

FPK: I first talked to E. T. Allen, who was then head of the Western Forestry and Conservation Association, about the possibility of having such a meeting as part of Western Forestry. Allen wasn't too keen about the idea, but said it would be all right if it wouldn't interfere with their proceedings. This didn't work out, so we decided to set up an organization independent of Western Forestry. We did set up the first Western Forest Insect Work Conference at their Portland meeting on December 7, 1949, with myself as the first chairman, Alex Jaenecke as vice-chairman, and Phil Johnson as secretary. There were nineteen men present at the first meeting.

RCH: I feel that the Work Conference is one of our more important organizations. It is still going strong, with more than two hundred men in attendance at the 1975 meeting held at Monterey.

FPK: Yes, and it is important in that it includes our forest entomology friends from western Canada.

RCH: Another organization you helped form was the Pacific Northwest Forest Pest Action Council, and you were also active in the California Forest Pest Control Action Council.

FPK: Ernie Kolbe was really the spark plug in the formation of the Pacific Northwest council, and I believe he also had an important role in the formation of the California council after he moved to California to take over the Western Pine Association.

RCH: One of the people who worked for you up in Oregon was Charlie Bedard. Can you tell us something about Bedard?

FPK: Bedard transferred from the Coeur d'Alene laboratory where he had been working for Jim Evenden. Evenden wasn't responding to his work very well so he came over to Portland. He was working on a project down near Bly in cooperation with Weyerhaeuser. He was studying the root system of ponderosa pines. He set up a project where there was a small stream nearby and he washed out the roots of sickly ponderosa pines and then compared these with the roots of healthy trees. I don't remember that he ever did find anything significant.

RCH: There was another major control project in which you were involved in the early days on the Kaibab National Forest in Arizona. Could you tell us a little about that project?

FPK: Yes, that followed after the southern Oregon-northern California project. I was assigned to the Kaibab project in 1924 because the Forest Service was not satisfied with the work that Edmonston and Hofer were doing down there, so I was sent down to direct and supervise this project. I found out that Edmonston and Hofer had no Systematic method of spotting the bug infested trees, so I set up a systematic spotting of the area. As a result, we soon found a number of infested trees in gulches that they had missed. Since the infested trees were concentrated in large groups, I recommended that instead of peeling the bark on individual trees and jack-strawing the logs that they cut and pile the infested trees in neat piles and then burn the whole pile.

At first the Forest Service didn't approve of the use of fire in this manner because they were afraid that the fires would get away. I finally convinced the Service that if we burned the piles while there was snow on the ground there would be little hazard of the fire escaping. So the supervisor approved. The crews proceeded to pile the trees and make the piles but didn't start burning until we had a general snow. Then they went out and burned all the piles at once. Most of the piles burned up satisfactorily, but fire from about six of the piles jumped the line and caused some problems. Then the Forest Service people said, "Oh, it was a disaster." They claimed that they could see the smoke and flames clear across the canyon and that the flames wore three hundred feet in the air. They said there were three or four hundred acres involved. I doubted that, so I went out and mapped in the burned area, and found that one area was thirty acres and another was forty acres, so the Forest Service people had greatly exaggerated the acreage involved. I also found that there was very little damage to any of the residual trees.

That was the second year I was there. It was the last year we had funds to do anything, but we had cleaned up most of the main area of infestation north of Jacob Lake. We had one really bad spot where in one section practically every tree was infested, a tremendous big group. We finally

decided that we were not going to be able to treat all the big groups like this, and we adopted the strategy of working on the perimeter somewhat like fighting a big forest fire. This method seemed to work and I got credit for having stopped the infestation.

RCH: Did they ever publish a report on the Kaibab project?

FPK: I don't believe they ever did.

RCH: I never could find any reference to this project in the literature. I also could find no reference to it in your and Miller's publication. Another question I had was about your role in the establishment of the Boyce-Thompson Institute Field Laboratory at Grass Valley, California. As I remember, you acted as a consultant on that project, didn't you?

FPK: Yes, through Beal's good offices I was offered the job of consultant at seventy-five dollars a day which I thought at the time was a terrific salary. It wasn't inflated in those days. So I went back to Yonkers, New York where Boyce Thompson had their main headquarters. The institute had not worked on forest insects up to that time; but was interested in doing something because one of the principal owners was a man who owned a large number of shares in the Empire Mine near Grass Valley. This property contained a considerable acreage of second-growth ponderosa pine, which had been subject to several outbreaks of the western pine beetle and Ips beetle. They were interested in establishing a field laboratory on the Empire Mine property, and I agreed that this would be a good location. They picked a prominent German forest entomologist, Dr. J. P. Vite of the University of Göttingen, to head up their program.

RCH: Do you recall anything about the Weyerhaeuser Company hiring a forest entomologist at Centralia Research Center?

FPK: Davidson was his name.

RCH: No, it was Vaughn McCowan who was hired in 1952 to carry on a research program on the Douglas-fir beetle. He was replaced by Dr. Norm Johnson in 1956. Other prominent forest entomologists who worked at the Centralia Center included Dr. Julius Rudinsky and Dr. Herman J. Heikkinen. This is a good example of a private company conducting a broad forest research program. Currently George Staebler is the director in charge of about fifty top level scientists, with an annual budget of over \$5 million.

Do you remember what happened to the old forest insect laboratory, at Coeur d'Alene, Idaho?

FPK: They had space in the new post office building, so I suppose it was occupied by some other agency.

RCH: According to Galen Trostle, who worked at the Coeur d'Alene lab from 1949 to 1954, the lab was phased out in 1954 with the Coeur d'Alene personnel transferred to Missoula, Montana.

There is another person who was with the Berkeley lab for a while, R. Z. Callaham. Did you have much contact with him?

FPK: Oh, yes. He went with me on a field trip to check the ten-acre sample plots in Oregon, and we camped together for about a month, so I got quite well acquainted with him. He was a very keen fellow and he wasn't averse to telling you off if he didn't agree with you. I was a little taken back when he said, "No, that isn't so; that isn't the way to do something." So I just decided to go his way. He was a very industrious fellow. He was always finding work to do around the laboratory. When we came back from the plot checking trip, I was at pains to find enough work in the lab to keep him busy. So I gave him a job indexing forest entomology literature there.

RCH: Then you really got him started in forest entomology.

FPK: Yes, that was his first experience in forest entomology although he had previously worked on a temporary basis for the Forest Service.

RCH: Callaham did some work up at Black's Mountain on the oleo resin pressure of ponderosa pine, but that was after he worked for you on the plots.

FPK: Where is he now?

RCH: He is a pretty big wheel in the Washington Office of the Forest Service. At one time he was in charge of forest insect and disease research. Since then he has moved up the ladder and I believe now that he is a project director.

FPK: Well, he was a very capable fellow, and he didn't believe in hiding it under a bushel.

RCH: No, he had a lot of confidence in Callaham, which is pretty good. He is a very capable individual.

FPK: Not to change the subject, but Bill [William E.] Waters, who replaced Beal, is the new dean of the College of Natural Resources at University of California.

RCH: They have changed the administrative structure of the old forest school at Cal and have now changed from a school to two departments: the Department of Forestry and Resource Management and the Department of Forestry and Conservation in the new College of Natural Resources, which includes several other disciplines. Waters is dean of the College of Natural Resources. Did you know Waters very well?

FPK: No, I only met him once at a meeting of Forest Service retirees, at which time he came over to me and said, "I always wanted to meet you. I'd like to have a chance to talk with you some more. So if you get into Berkeley, come up to my office."

RCH: Waters is one of our outstanding forest entomologists and now has a pretty responsible job as dean of the new College of Natural Resources.

Is there anything you would like to add about Ernie Kolbe? You lived together for a while in Portland, didn't you?

FPK: Almost from the time I moved up there. I don't know what to add about Ernie. He didn't become interested in forest entomology until after he left the Forest Service and became head of the Western Pine Association. While in that position he became a very active supporter of our program. He was largely responsible for the formation of the Pacific Northwest Pest Action Council and served as its chairman for many years. He was very active in supporting anything that was good for the division of forest insects.

RCH: Do you have anything further you'd like to add?

FPK: There is one thing I remember about a meeting we had at the Boyce-Thompson station up at Grass Valley, when we were considering laying out some cooperative sample plots. One man was there who didn't know me but he began talking about my tree classification and started to explain it. Somebody else spoke up and said, "Well, you are talking to the man who developed the tree classification, right here." He was kind of taken aback to know that.

RCH: Paul, I guess that pretty well covers the questions I had in mind. If later on you want to add anything, feel free to do so.

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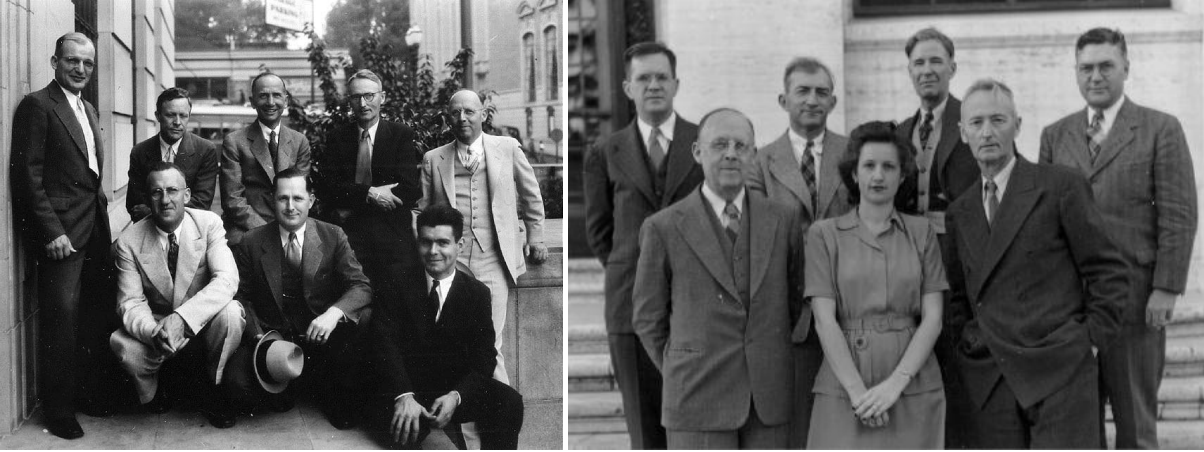
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Left: In April 1915, A.D. Hopkins (left), Washington, D.C., visited the Ashland, Oregon, station on his last western trip. Others from left are: Walter E. Glendinning, John M. Miller, John E. Patterson, Jules D. Riggs, P.D. Sergent and F. Paul Keen who had just been hired as Entomological Ranger.

Right: Conference of Bureau of Entomology and Forest Service men at Ashland, Oregon, June 1917. From left: Front row, F. Paul Keen, Thomas E. Snyder, Ralph Hopping. Back row: Albert W. Wagner, John M. Miller, Alex J. Jaenecke. Hopping represented Forest Service Region 5 (California), and Jaenecke Region 6 (Oregon & Washington), Snyder was visiting from the Washington office of the Bureau. Wagner was an Entomological Ranger recently transferred from the Missoula station of the Bureau that had just closed. Miller and Keen were stationed at the time at Ashland studying cone & seed insects.



Left: Forest entomologists at a conference in Portland, OR in 1936: (from left, kneeling) J.C. Evenden, Coeur d'Alene, ID; J.A. Beal, recently transferred to Fort Collins, CO; R.L. Furniss, Portland; (from left, standing) W.J. Buckhorn, Portland; F.C. Craighead, Washington, D.C.; A.J. Jaenecke, Forest Service, Portland; J.M. Miller, Berkeley, CA; and F.P. Keen, Portland. Keen replaced Miller as leader at Berkeley in 1942 and R.L. Furniss took over at Portland.

Right: Forest Insect Laboratory personnel, University of California, Berkeley (front, left to right): F. Paul Keen, Edith E. Black, John M. Miller, (back row): George R. Struble, Ralph C. Hall, John E. Patterson, Phillip C. Johnson. January 25, 1946. Missing is Jack W. Bongberg, apparently still in U.S. Navy. (Furniss & Wickman 1998)